CLAIMS

1. (Currently Amended) A protection circuit for a power semiconductor device having a collector, a gate, and an emitter, the circuit comprising:

a first comparator which detects a collector voltage of said power semiconductor device to output a first detection signal when the detected collector voltage exceeds a first reference voltage;

a second comparator which detects a gate voltage of said power semiconductor device to output a second detection signal, when the detected gate signal exceeds a second reference voltage which is produced on the basis of a potential at the emitter of said power semiconductor device and set to be lower than a line power voltage of a drive circuit for outputting a drive signal that drives said power semiconductor device and higher than a terraced voltage of the power semiconductor device;

logic means for outputting a protection start signal when both the first and second detection signals are being ~~outputted~~ output; and

gate voltage reduction means for reducing said gate voltage in accordance with the protection start signal from said logic means,

said power semiconductor device being a trench type power semiconductor device.

2. (Previously Presented) The protection circuit according to claim 1, wherein said second comparator detects said gate voltage based on a voltage obtained by dividing a gate voltage of said power semiconductor device by voltage dividing resistors.

3. (Previously Presented) The protection circuit according to claim 1, wherein said gate voltage reduction means cuts off a drive signal of said drive circuit and reduces said gate voltage such that it sequentially decreases.

4. (Previously Presented) The protection circuit according to claim 2, wherein said gate voltage reduction means cuts off a drive signal of said drive circuit and reduces said gate voltage such that it sequentially decreases.

5. (Previously Presented) The protection circuit according to claim 1, wherein the first reference voltage of said comparator is set at a voltage which is higher than an On-state collector voltage and lower than a line power voltage of said drive circuit.

6. (Previously Presented) The protection circuit according to claim 2, wherein the first reference voltage of said comparator is set at a voltage which is higher than an On-state collector voltage and lower than a line power voltage of said drive circuit.

7. (Previously Presented) The protection circuit according to claim 3, wherein the first reference voltage of said comparator is set at a voltage which is higher than an On-state collector voltage and lower than a line power voltage of said drive circuit.

8. (Previously Presented) The protection circuit according to claim 4, wherein the first reference voltage of said comparator is set at a voltage which is higher than an On-state collector voltage and lower than a line power voltage of said drive circuit.

9. (Previously Presented) The protection circuit according to claim 1, wherein said first comparator, second comparator, logic means, and gate voltage reduction means are formed in semiconductor integrated circuits together with said drive circuit.

10. (Previously Presented) The protection circuit according to claim 2, wherein said first comparator, second comparator, logic means, and gate voltage reduction means are formed in semiconductor integrated circuits together with said drive circuit.

11. (Currently amended) An inverter for converting DC current to AC current, the inverter comprising:

a power semiconductor device for converting DC current to AC current; and

a control unit which controls a switching operation of said power semiconductor device, said control unit comprising:

a first comparator which detects a collector voltage of said power semiconductor device to output a first detection signal when the detected collector voltage exceeds a first reference voltage;

a second comparator which detects a gate voltage of said power semiconductor device to output a second detection signal, when the detected gate signal exceeds a second reference voltage which is produced on the basis of a potential at the emitter of said power semiconductor device and set to be lower than a line power voltage of a drive circuit for outputting a drive signal that drives said power semiconductor device and higher than a terraced voltage of the power semiconductor device;

logic means for outputting a protection start signal when both the first and second detection signals are being ~~outputted~~ output;

gate voltage reduction means for reducing said gate voltage in accordance with the protection start signal from said logic means; and

computer processor means for controlling the ON/OFF operation of said power semiconductor device,

said power semiconductor device being a trench type power semiconductor device.

12. (Previously Presented) A hybrid electric vehicle having an internal combustion engine, an electric motor, a transmission for transmitting power from said internal combustion engine and/or said electric motor to wheels, an inverter unit for converting DC power to AC power, and a DC power storage unit, wherein

said electric motor is an AC motor driven by AC power from said inverter unit including the inverter according to claim 11.

13. (Previously Presented) An electric vehicle having an electric motor, a transmission for transmitting power from said electric motor to wheels, an inverter unit for converting DC power to AC power, and a DC power storage unit, wherein

said electric motor is an AC motor driven by AC power from said inverter unit including the inverter according to claim 11.